

**REGULATION III - CONTROL OF AIR CONTAMINANTS
NEW RULE 324
STATIONARY INTERNAL COMBUSTION (IC) ENGINES**

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**MARICOPA COUNTY
AIR POLLUTION CONTROL REGULATIONS
REGULATION III - CONTROL OF AIR CONTAMINANTS**

**NEW RULE 324
STATIONARY INTERNAL COMBUSTION (IC) ENGINES**

SECTION 100 – GENERAL

- 101 PURPOSE:** To limit carbon monoxide (CO), nitrogen oxides (NO_x), sulfur oxides (SO_x), volatile organic compounds (VOCs), and particulate matter (PM) emissions from stationary internal combustion (IC) engines and ~~those stationary~~ IC engines used in cogeneration.
- 102 APPLICABILITY:** The provisions of this rule ~~shall~~ apply to any single existing or new stationary spark or compression-ignited reciprocating IC engine ~~and or~~ IC engine used in cogeneration with a rating of greater than 250 ~~brake~~ horsepower (bhp). ~~nd~~ The provisions of this rule also ~~applies~~ to a combination of IC engines each with a rated brake horsepower greater than 50 bhp used at a single source whose maximum aggregate rated brake horsepower is greater than 250 bhp.
- 103 EXEMPTIONS:** The following types of stationary IC engines are exempt from all of the requirements of this rule:
- 103.1** Any rotary engine, including gas turbines, jet engines.
- 103.2** An IC engine operated as a portable engine.
- 103.3** An IC engine used directly and exclusively by the owner and/or operator for agricultural operations necessary for the growing of crops or the raising of fowl or animals.
- 103.4** A laboratory IC engine used directly and exclusively for engine research including engine development, and subsequent engine performance verification for the purpose of either engine emission control techniques or engine efficiency improvements.
- 103.5** A prime IC engine when it is operated for purposes of performance verification and testing.
- 103.6** A compressed gas IC engine used for solar testing and research programs.
- 103.7** An IC engine operated as an emergency generator at a nuclear power plant that must run for safety reasons and/or operational tests to meet requirements imposed by the Nuclear Regulatory Commission. However, any discharge of air contaminants, except condensed water containing no more than analytical trace amounts of other chemical elements or compounds, in excess of opacity limits in Rule 300 of the Maricopa County Air Pollution Control Regulations shall not contribute to a violation of the national ambient air quality standard. In addition, any discharge of NO_x, VOC, or CO in excess of the limits in Section 300 of this rule should not contribute to a violation of the National Ambient Air Quality Standards.

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104 PARTIAL EXEMPTIONS FOR EMERGENCY ENGINES: Any stationary IC engine operated solely as an emergency generator, with the exception of periodic testing and maintenance, for any of the following reasons is exempt from all of the provisions of this rule, except for the provisions in Sections 301, ~~Section 304~~ 303 and subsections 502.1 and 502.4:

104.1 Used only for power when normal power service fails from the serving utility or if ~~failure of~~ onsite electrical transmission or onsite power generation equipment fails or

104.2 Used only for the emergency pumping of water resulting from a flood, ~~police~~, fire, lightning strikes, police action or for any other essential public services which affect the public health and safety; or

104.3 Used for lighting airport runways; or

104.4 Used for sewage overflow mitigation and/or prevention; or

104.5 Used for reliability-related activities such as engine readiness, calibration, or maintenance or to prevent the occurrence of an unsafe condition during electrical system maintenance, as long as the total number of hours of the operation does not exceed 100 hours per calendar year per engine; or

104.6 Used as the primeary motor when the primeary motor has failed, but only for such time as is needed to repair the primeary motor; or

104.7 Used as standby emergency water pumps for fire control that operate ~~distribute water~~ when sensors detect low water pressure.

105 NON-EXEMPTIONS: The emergency exemption in Section 104 shall not apply to those engines used for any of the following purposes:

105.1 Supplying sStandby power due to a voluntary reduction in power by a utility or power company; or

105.2 Supplying power for distribution or sale to the grid; or

105.3 Supplying power at a source in order to avoid peak demand charges; or

105.4 Avoiding high electric energy prices during on-peak price period.

106 PARTIAL EXEMPTIONS FOR NON-EMERGENCY LOW USAGE PRIME ENGINES: The following non-emergency, low usage, prime engines are exempt from all of the provisions of this rule except for the provisions in Sections s 301, 303 and subsection 502. 1 and 502.2:

106.1 Engines rated at or below 1000 bhp ~~which that~~ operate less than 200 hours in any 12-consecutive-month period and

106.2 Engines rated above 1000 bhp ~~which that~~ operate less than 100 hours in any 12-consecutive-month period.

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SECTION 200 – DEFINITIONS: For the purpose of this rule, the following definitions shall apply. See Rule 100 (General Provisions And Definitions) of these rules for definitions of terms that are used but not specifically defined in this rule.

- 201 AFTERCOOLER / INTERCOOLER** – A system that cools the engine intake air or air/fuel mixture after the turbocharger and prior to the introduction into the cylinder, thereby lowering NOx emissions.
- 202 COGENERATION UNIT** – Internal combustion engine unit that burns fuel to simultaneously produce electricity and heat in a single thermodynamic process and is usually located in close proximity to the equipment requiring the heat energy.
- 203 COMPRESSION - IGNITION ENGINE** – A reciprocating internal combustion engine with operating characteristics wherein the principal mechanism of igniting the fuel and air mixture in the cylinders is by the compression of air in the cylinder until it is so hot that any fuel injected into the air or mixed with the air ignites. In this type of engine, a separate ignition source, such as a spark plug, is not used.
- 204 DIESEL ENGINE** – A type of compression- ignited IC engine.
- 205 EMERGENCY GENERATOR** – Any stationary standby IC engine whose sole function is to provide back-up power when electric power from the local utility is interrupted or when operated solely for any of the reasons listed in Section 104.
- 206 ENGINE FAMILY** - A group of engines with similar design features such as fuel type, cooling medium, method of air aspiration, combustion chamber design including cylinder bore and stroke, exhaust aftertreatment (if any), method of fuel admission, and method of control. These engines are also expected to have similar emission and operating characteristics throughout their useful lives.
- 207 EQUIVALENT REPLACEMENT ENGINE** – An engine that is substituted for a stationary IC engine that is intended to perform the same or similar function as the original engine and where all of the following conditions exist:
- a. The replacement engine results in equal or lower air contaminant emissions than the existing engine; and
 - b. The replacement engine meets the emission control technology standards contained in either Table 1 or Table 2 of this rule; and
 - c. The rated bhp of the replacement engine does not exceed the rated bhp of the existing engine (or sum of existing engines) by more than 20 percent.
- ~~208~~ 208 EXISTING ENGINE** - An engine which commenced operation prior to (date of adoption of this rule), or an engine on which the construction or modification has commenced prior to (date of adoption of this rule). This includes the contractual obligation to undertake and complete an order for an engine.
- ~~209~~ FUEL OIL**– ~~Liquid fuel derived from crude petroleum and broadly classified into distillate oils such as kerosene (used mostly for domestic and small commercial applications) and residual (used in utility and industrial boilers) oils. Fuel oils are classified into six different grades depending upon the~~

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~~physical and chemical properties of each grade of fuel oil. Rule 100—Numbers 2 through Number 6 fuel oils as specified in ASTM D 396-90a (Specifications For Fuel Oils), gas turbine fuel oils Numbers 2-GT through 4-GT as specified in ASTM D 2880-90a (Specification For Gas Turbine Fuel Oils), or diesel fuel oils Numbers 2-D and 4-D as specified in ASTM D 975-90a (Specification For Diesel Fuel Oils).~~

209 IDENTICAL REPLACEMENT ENGINE – An engine that is substituted for an existing stationary IC engine that has the same manufacturer type, model number, manufacturer's maximum rated capacity, bhp, and that is intended to perform the same or similar function as the original stationary IC engine that it replaces and has equal or lower emissions or meets the emission control technology requirements in Section 304, Table 1, 2 or 3.

210 INTERNAL COMBUSTION (IC) ENGINE, ~~PORTABLE~~ NONROAD- Any ~~reciprocating, piston-driven~~ IC engine:

a. In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function such as garden tractors, off-highway mobile cranes and bulldozers); or

b. In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

c. That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include ~~capable of being carried or moved from one source location to another by, but not~~ but are not limited to, wheels, skids, carrying handles, dollies, trailers, or platforms.

An internal combustion engine is not a nonroad engine if:

a. The engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the Clean Air Act; or

b. The engine is regulated by a federal New Source Performance Standard promulgated under section 111 of the Act; or

c. The engine otherwise included in paragraph c above of this definition remains or will remain at a location for more than 12 consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e. at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location, and that operates at 1 specific site for less than 12 consecutive months. Any portable engine that replaces a portable engine at a site will be included in calculating the consecutive time if it performs the same function as the engine being replaced. In that case, the cumulative time of both engines, including the time between the removal of the original unit and installation of the replacement unit, would be counted towards the consecutive time period. An engine is not portable if it is removed from one site for a period of time and then returned to the same site

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~~an attempt to circumvent the 12 month residence time requirement. The period of time during which the engine is stored and not operating at a storage facility shall be excluded from the 12 month residency requirement.~~

2112 INTERNAL COMBUSTION (IC) ENGINE, STATIONARY – Any reciprocating, piston-driven IC engine that is operated or intended to be operated at one specific location ~~site~~ for more than 12 consecutive months or that is attached to a foundation at the location. ~~site~~ Any engine that replaces an engine at a ~~site~~ location and is intended to perform the same or similar function as the engine being replaced will be included in calculating the consecutive time period. A stationary IC engine is not a non-road engine.

2123 LEAN-BURN ENGINE – A spark-ignited engine with an air-to-fuel operating range that has more air present than is needed to burn the fuel present and cannot be adjusted to operate with an exhaust oxygen concentration of less than or equal to 2 %.

213 LOCATION – Any single site at a building, structure, facility or installation.

214 LOW SULFUR OIL – Fuel oil containing less than or equal to 0.05 %, sulfur by weight.

215 NEW ENGINE – An engine which is not an existing engine.

216 NITROGEN OXIDES (~~NO~~ NO) – Oxides of nitrogen calculated as equivalent nitrogen dioxide.

217 PART(S) PER MILLION, DRY VOLUME (ppmdv) – A unit of proportion equal to 10^{-6} that is measured on a dry basis (minus water).

218 PRIME ENGINE – A principal or main use engine that is dedicated to a process or processes for the purpose of supplying primary mechanical or electrical power as opposed to an emergency generator.

21819 RATED BRAKE HORSEPOWER – The maximum brake horsepower (bhp) specified by the engine manufacturer for the engine application, ~~and~~ usually listed on the nameplate of the engine. If the engine has been altered so that the maximum brake horsepower is different than the rated brake horsepower on the nameplate, then the maximum brake horsepower shall be considered the rated brake horsepower.

21920 RICH-BURN ENGINE Any spark-ignited IC engine that is not a lean-burn engine.

221 SPARK-IGNITION ENGINE – An IC engine wherein the fuel is usually mixed with intake air before introduction into the combustion chamber resulting in a relatively homogeneous air/fuel mixture in the combustion chamber, at which time a spark plug then ignites the air/fuel mixture.

222 SULFUR OXIDES (SO_x) – Oxides of sulfur calculated as equivalent sulfur dioxide.

~~**222 WASTE DERIVED FUEL GAS** – Untreated, raw gas used as fuel and derived through either a natural process from the decomposition of organic waste deposited in a solid waste disposal site, from the evolution of volatile species in the waste or from chemical reactions of substances in the waste (all landfill gas) or as a by-product of anaerobic digestion of biosolids (biogas or digester gas).~~

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301 LIMITATIONS FOR NEW AND EXISTING STATIONARY IC ENGINES: An owner or operator of any engine that meets the applicability criteria in Section 102 shall comply with one of the following:

301.1 Use natural gas or

~~Use waste derived fuel gas that does not emit pollutants in concentrations greater than listed in Tables 1, 2 or 3 dependent upon the particular type of engine or~~

301.2 Use any fuel ~~oil or waste derived fuel gas~~ that contains no more than 0.05% sulfur by weight, alone or in combination with other fuels, with the following exception:

a. Existing supplies in storage as of (insert date of adoption of rule) of any fuel containing greater than 0.05% of ~~by weight of~~ sulfur by weight may be used by the owner or operator until (insert 1.5 years after adoption of rule). This usage shall be reported to the Control Officer along with the dates of usage.

b. If an owner or operator burns landfill or digester gas in the IC engine then the sulfur content of the gas shall be reported to the Control Office, and evaluated on an individual basis.

302 GOOD COMBUSTION PRACTICES/TUNING PROCEDURE: An owner or operator shall ~~conduct~~ preventive maintenance or tuning procedures recommended by the engine manufacturer to ensure good combustion practices to minimize ~~NOx~~ NOx emissions. A handheld monitor may be used if so desired by the owner or operator for measurement of ~~NOx~~ NOx, CO and O2 concentrations in the effluent ~~stream after~~ stream after each adjustment is made. This may assist in determining that the proper adjustment has been made to insure ~~NOx~~ NOx and CO minimization. In lieu of a manufacturer's procedure, a different procedure specified by any other maintenance guideline may be used as a default procedure, if approved in writing by the Control Officer. The tuning procedure shall include all of the following, if so equipped and appropriate to the type of filter.:

302.1 Lubricating Oil and Filter: Change once every three months or after no more than 300 hours of operation, whichever comes first;

302.2 Inlet Air Filter: Clean once every three months or after no more than 300 hours of operation and replace every 1,000 hours of operation or every year, whichever comes first;

~~b.~~ **302.3** Fuel Filter: Clean once every year or replace (if cartridge type) once every 1,000 hours of operation, whichever comes first;

~~e.~~ **302.4** Check and adjust the following (if necessary and so equipped) once every year or after no more than 1,000 hours of operation, whichever comes first:

- a. Intake and Exhaust Valves
- b. Spark Plugs (if so equipped)
- c. Spark Timing and Dwell or Fuel Injection Timing (if adjustable)
- d. Carburetor Mixture (if adjustable)

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302.5 Spark Plugs and Ignition Points (if so equipped): Replace after 3,000 hours of operation or every year whichever comes first:

302.6 Coolant (if so equipped): Change ~~once every year~~ after 3,000 hours of operation or every year whichever comes first; and

302.7 Exhaust System: Check for leaks and/or restrictions after 3,000 hours of operation or ~~once~~ every year whichever comes first.

304303 **LIMITATIONS – OPACITY:** No owner or operator shall discharge into the ambient air from any single source of emissions any air contaminant, other than uncombined water, in excess of 20%opacity.

304 **ADDITIONAL LIMITATIONS FOR ~~-PRIME~~ ENGINES>250 RATED BHP:** In addition to meeting the standards in Sections 301, 302, and 303, ~~applicable~~ existing or new ~~spark or compression-ignition~~ prime-engines greater than 250 rated bhp that are not listed in Sections 103,104 or 106, shall comply with the emission limits or control technology requirements listed in ~~either~~ Section 304 Table 1, 2, or 3 dependent upon the type of engine.

TABLE 1: NO_x EMISSION LIMITS OR CONTROL TECHNOLOGY REQUIREMENTS FOR EXISTING COMPRESSION-IGNITION ENGINES > 250 RATED BHP

Rated Brake Horsepower (bhp)	Engine Requirements
250-399	770 ppm _{dv} NO _x or turbocharger with aftercooler/intercooler or 4-degree injection timing retard
400 plus	550 ppm _{dv} NO _x or turbocharger with aftercooler/intercooler or 4-degree injection timing retard

TABLE 2: ~~SPARK IGNITION ENGINE REQUIREMENTS~~ EMISSION LIMITS OR CONTROL TECHNOLOGY REQUIREMENTS FOR EXISTING APPLICABLE SPARK- IGNITION ENGINES

<u>OXIDES OF NITROGEN (NO_x)</u>	<u>VOLATILE ORGANIC CARBON COMPOUND (VOC)</u>	<u>CARBON MONOXIDE (CO)</u>
<u>280 213</u> ppm _{dv} (4.0 g/bhp-hr) or <u>three-way</u> catalyst	800 ppm _{dv} (5.03.3 g/bhp-hr) or <u>three-way</u> catalyst	2,000 ppm_v on a dry basis corrected to 15% oxygen (CURRENTLY PERMITTING 25,344 PPMDV OR CATALYST <u>4,500 ppm_{dv} (39 g/bhp-hr) or three-way catalyst*</u>

* The three-way catalyst shall provide a minimum of 80% control efficiency for NO_x and CO and a minimum of at least 50% control efficiency for VOC.

302 ~~New Stationary IC Engine: Any new stationary IC engine shall meet the standards or the Code~~

[of Federal Regulations, CFR 40 Part 89 by \(date of ad](#)

**TABLE 3: EMISSION LIMITS FOR NEW SPARK OR COMPRESSION-IGNITION
ENGINES > 250 RATED BHP**

ENGINE TYPE	NOx	PM	CO
LEAN BURN (SPARK)	110 ppmdv	Not Applicable	4,500 ppmdv
RICH BURN (SPARK)	20 ppmdv	Not Applicable	4,500 ppmdv
COMPRESSION	530 ppmdv	0.40 g/bhp-hr	1,000 ppmdv

- 305 EQUIVALENT OR IDENTICAL ENGINE REPLACEMENT:** An equivalent or identical replacement engine that replaces an existing engine shall be treated as an existing engine for the purposes of compliance with this rule.

SECTION 400 - ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULE:

- 401.1** An owner or operator of an existing or new stationary IC engine that becomes subject to any of the emission limits [of this rule](#) listed in Section 300 of this rule and that does not need modification or add-on controls to meet these emission standards shall be in compliance by (6 mos. after the rule is adopted).
- 401.2** An owner or operator of an existing stationary IC engine that must be rebuilt, modified, or retrofitted with add-on control equipment to meet emission limits listed in Section 300 of this rule shall submit a compliance plan for [this such unit](#) by (1 year after the rule is adopted) and shall be operating in full compliance by (3 years after the rule is adopted).
- 401.3** An owner or operator of an existing stationary IC engine that must be replaced with a new engine shall be in compliance with this rule by (4 yrs. after the rule is adopted). The new engine shall meet the emission limits [listed](#) in Section 304-Table 3.

SECTION 500 - MONITORING AND RECORDS

501 COMPLIANCE DETERMINATION:

- 501.1 Existing Engines:** Existing IC engines or engine families shall demonstrate compliance with [Section 300](#) by recordkeeping [per according to](#) Section 502. Emission testing using the applicable test methods listed in Section 503 shall be performed if the Control Officer requests.
- 501.2 Existing Engine Families at a Source:** When testing an engine family at one source, the number of engines tested should be the greater of either one engine or one third of all identical engines in the group. If any of the representative engines exceed the emission limits, each engine in the group shall demonstrate compliance by emissions testing.

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501.3 New Engines/ New Engine Families: Compliance with the limitations listed in Section 304. Table 3 shall be demonstrated by either:

- a. A statement from the manufacturer that the engine meets the federal standards ~~of EPA certification according to found in~~ 40 CFR Part 89 or 90, or
- b. Performance of emission testing using the test methods listed in Section 503

501.4 Low Sulfur Oil Verification: If proof of the sulfur content is requested by the Control Officer the owner or operator shall submit fuel receipts, contract specifications, or Material Safety Data Sheets (MSDS) from the fuel supplier indicating the sulfur content of the fuel oil ~~shall be submitted to the Control Officer if proof of the sulfur content is requested by the Control Officer~~. In lieu of these, testing of the fuel oil for sulfur content to meet the 0.05% limit shall be permitted if so desired by the source for evidence of compliance.

501.5 Test Method Conditions: The owner or operator shall use the ~~The~~ test methods listed in Section 503 ~~shall be used by the owner or operator~~ to determine compliance with the limitations in Section 302~~4~~, Tables 1-3. Testing for stationary IC engines shall be completed under steady state conditions at no less than 80% of the rated brake horsepower rating. If the owner or operator of an engine demonstrates to the Control Officer that the engine cannot operate at these conditions, then emissions source testing shall be performed at the highest achievable continuous brake horsepower rating or under the typical duty cycle or typical operational mode of the engine.

502 RECORDKEEPING/RECORDS RETENTION: The owner or operator of any stationary IC engine subject to this rule shall comply with the following requirements and keep records for a period of 5 years:

502.1 An owner or operator of any IC engine, including emergency engines, prime engines and low usage engines, shall keep an ~~IC engine~~ log that includes an initial one time entry that lists the particular engine combustion type (compression or spark-ignition or rich or lean burn); manufacturer; model designation, rated brake horsepower, and where the engine is located on the site.

502.2 An owner or operator of a prime engine shall maintain ~~A a~~ monthly log for prime engines which shall include: ~~emergency engines which includes:~~

- a. Dates and hours of operation, or an estimate of the hours of operation;and
- ~~2. Total fuel used in gallons per hour or day for liquid fuels and in standard dry cubic feet, Btu or per hour or day for gaseous fuels and~~
- b. Type of fuel used ~~;and~~
- c. Documentation verifying compliance with sulfur fuel content per~~according to sub~~Sections 1 or 301.301~~and~~

502.3 An owner or operator of a prime engine shall maintain an annual log of good combustion procedures according to Section 302.

502.4 An owner or operator of an emergency engine and a non-emergency low -usage engine shall include:

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- a. Dates and hours of operation; and
- b. Type of fuel used including sulfur content; and
- c. Support documentation identifying reasons for the usage.

~~c. An owner or operator of an engine claiming an exemption per subsection 103.5, Section 104 or Section 106 shall maintain annual records per subsection 502.1(a) and (b), including support documentation identifying reasons for the exemption and the hours spent performing exempt operations. This recordkeeping for exemption purposes may be included in the IC engine monthly log per 502.1b or it may be kept in a separate log.~~

503 TEST METHODS: The Environmental Protection Agency (EPA) test methods as they exist in the Code of Federal Regulations (CFR) (July 1, 2001), as listed below, are adopted by reference. The American Society of Testing Materials (ASTM) methods listed below are also adopted by reference, each having paired with it a specific date(s) that identifies the particular version/revision of the method that is adopted by reference. These adoptions by reference include no future editions or amendments. When more than one test method, as listed in subsections 503.11, 503.12, 503.13, or 503.14, is permitted for the same determination, an exceedance of the limits established in this rule determined by any of the applicable test methods constitutes a violation. Copies of test methods referenced in this section of this rule are available at the Maricopa County Environmental Services Department, 1001 North Central Avenue, Phoenix, Arizona, 85004 -~~1942~~ 1942.

503.1 EPA Reference Methods¹ (“Sample and Velocity Traverses for Stationary Sources”) and 1aA (“Sample and Velocity Traverses for Stationary Sources with Small Stacks and Ducts”) (40CFR 60, Appendix A).

503.2 EPA Reference Methods 2 (“Determination of Stack Gas Velocity and Volumetric Flow Rate”), 2aA (“Direct Measurement of Gas Volume Through Pipes and Small Ducts”), 2eC (“Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts”) and 2dD (“Measurement of Gas Volumetric Flow Rates in Small Pipes and Ducts”) (40 CFR 60, Appendix A).

503.3 EPA Reference Methods 3 (“Gas Analysis for the Determination of Dry Molecular Weight”), 3A (“Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)”) 3B “Gas Analysis for the Determination of Emission Rate Correction Factor of Excess Air”), and 3C (“Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from Stationary Sources”) (40 CFR 60, Appendix A).

503.4 EPA Reference Method 4 (“Determination of Moisture Content in Stack Gases”) (40 CFR 60, Appendix A).

503.5 EPA Reference Method 5 (“Determination of Particulate Emissions from Stationary Sources”) (40 CFR 60, Appendix A) and possibly, if requested by the Control Officer, EPA Reference Method 202 (“Determination of Condensable Particulate Emissions from Stationary Sources”) (40 CFR 51, Appendix M).

503.6 EPA Reference Methods 7 (“Determination of Nitrogen Oxide Emissions from Stationary Sources”), 7A (“Determination of Nitrogen Oxide Emissions form Stationary Sources”), 7B (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Ultraviolet Spectrometry”), 7C (“Determination of Nitrogen Oxide Emissions from Stationary

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Sources – Alkaline-Permanganate Colorimetric Method”), 7D (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Alkaline – Permanganate Chromatographic Method”), and 7E (“Determination of Nitrogen Oxide Emissions from Stationary Sources – Instrumental Analyzer Method”), (40 CFR Part 60 ,Appendix A).

- 503.7** EPA Reference Method 9 (“Visual Determination of the Opacity of Emissions from Stationary Sources”) (40 CFR 60, Appendix A).
- 503.8** EPA Reference Method 10 (“Determination of Carbon Monoxide from Stationary Sources”) (40 CFR 60, Appendix A).
- 503.9** EPA Reference Method 18 (“Measurement of Gaseous Organic Compound Emissions by Gas Chromatography”) (40 CFR 60, Appendix A).
- 503.10** EPA Reference Method 25A (“Determination of Total Gaseous Organic Concentration Using a Flame Ionization Analyzer”) (40 CFR 60, Appendix A).
- 503.11** American Society of Testing Materials, ASTM Method #D2622-98 (“Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-Ray Fluorescence Spectrometry”), 1998.
- 503.12** American Society of Testing Materials, ASTM Method #D1266-98 (“Standard Test Method for Sulfur in Petroleum Products (Lamp Method)”), 1998.
- 503.13** American Society of Testing Materials, ASTM Method #D2880-71, 78 or 96 (“Standard Specification for Gas Turbine Fuel Oils”), 1971 or 1978 or 1996.
- 503.14** American Society of Testing Materials, ASTM Method #D4294-98 (“Standard Test Method for Sulfur in Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectroscopy”) 1990 or 1998.